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Comparison of CT and MRI Modalities in Detection of Breast Cancer

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In this review article we explain role of some modalities in detection of breast cancer. CT is usually not the first modality to be used in imaging breast cancer, but it may be used as an adjuvant for monitoring spread. Although it involves some exposure to radiation, it should be considered in patients in whom MRI is contraindicated. Three-dimensional (3D) helical CT can provide good information about the spread of breast cancer and could be an alternative to 3D MRI for preoperative examination of breast cancer. In vitro high-resolution helical CT scan depict the internal structure of small nodes. Morphologic changes detected on helical CT help distinguish benign from malignant nodes. Tumors appear as dense lesions on CT and usually show early contrast enhancement similar to that seen with dynamic MRI. CT is less sensitive than m High-resolution contrast-enhanced MRI of the breast has recently emerged as a sensitive instrument for the detection of breast cancer. The sensitivity of MRI makes it an excellent tool in specific clinical situations, such as the detection of local recurrence in patients who have received breast-conservation therapy and augmented breasts with implants. Furthermore, MRI of the breast has the potential to be a powerful aid in presurgical planning (multifocal cancer detection) and to be a useful adjunct to mammography in selected patients. MRI, however, has a significant false-positive rate, it is not readily available in all areas, and it is more expensive than mammography and sonography. Other limitations are the use of gadolinium-based contrast agent, problems with claustrophobia, and longer imaging times. It also remains unclear if alterations in management plans based on MRI findings actually benefit patients. Breast cancer appears bright on T2-weighted images and usually enhances on T1-weighted images after gadolinium enhancement. The lesions are best imaged with fat-suppression techniques to eliminate the high signal intensity from fat on T1-weighted sequences. Two-dimensional (2D) or 3D techniques with gradient-echo sequences are time efficient and now largely used. MRI may prove useful in screening younger women with dense breasts who are at a special high risk of developing breast cancer (eg, strong family history). Its low specificity means that special techniques are needed to develop MRI guidance to biopsy performance, as some lesions visible on MRI are not seen by other imaging modalities.